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HAZARDOUS WASTE LAMPS: FINAL RULE Effective Date: January 6, 2000

INTRODUCTION

On July 6, 1999 [64 FR 36466], the U.S. Environmental Protection Agency (EPA or the Agency) published a Final Hazardous Waste Lamps Rule adding all hazardous waste lamps to the universal waste program.

Under the Final Hazardous Waste Lamps Rule, effective January 6, 2000, some controls will be placed on the management of hazardous waste lamps, but a more simple, streamlined system will be available as an alternative to the full hazardous waste management requirements under Subtitle C of the Resource Conservation and Recovery Act (RCRA).

The purpose of this Regulatory Bulletin is to provide information on the new options provided by the Final Hazardous Waste Lamps Rule.

BACKGROUND

On July 27, 1994, 59 FR 38288, EPA proposed two approaches for controlling the management of spent mercury-containing lamps. The first approach suggested providing a conditional exemption from hazardous waste regulation for waste mercury-containing lamps. The second approach proposed adding waste mercury-containing lamps to the universal waste program, which had been proposed in 1993 (58 FR 8102; February 11, 1993).

On May 11, 1995, EPA promulgated the final Universal Waste Rule [60 FR 25492] without including mercury-containing lamps on the list of universal wastes. At the time, EPA expressed the need for further investigation of the risks posed by the lamps. Moreover, the Agency solicited further information on the risks of current or developing mercury recovery technologies.

On July 11, 1997, EPA published a notice of data availability (NODA) regarding mercury emissions from managing spent lamps [62 FR 37183]. In addition to announcing data on mercury emissions from managing spent lamps, the NODA provided an electronic model and a report that analyzed mercury emissions from the management of waste mercury-containing lamps under different regulatory approaches. EPA received thirty-five comments on this NODA. After reviewing the comments, the Agency prepared a response document and revised its model and report.

Based on comments received on the 1994 proposed rule and on its review of the final study on mercury emissions, which was published in May 1998, EPA concluded that mercury-containing lamps should be regulated as universal waste rather than granting a conditional exemption. (See pages 2 and 3 of this Regulatory Bulletin)

The Final Hazardous Waste Lamps Rule provides less stringent, revised Federal regulations for management of hazardous waste lamps and supports energy conservation efforts, while protecting human health and the environment.

General Regulatory Framework. Solid waste generators have to determine (through testing or knowledge) whether their waste is hazardous. A waste may be listed as hazardous in 40 CFR Part 261 or exhibit one or more hazardous waste characteristics. EPA has not "listed" spent lamps as hazardous waste. EPA prescribes the Toxicity Characteristic Leaching Procedure (TCLP) for determining the toxicity of a waste. According to EPA data, fluorescent and high-intensity discharge (HID) lamps may exhibit the toxicity characteristic (TC) for mercury. Some HID and other types of lamps also may fail the TC because of lead.

EPA is in the process of re-assessing the TCLP and its regulatory threshold levels. As a result of these studies, EPA may in the future change the regulatory levels for mercury. The Agency,

however, emphasizes in the preamble to the Final Hazardous Waste Lamps Rule that the TCLP is appropriate for ascertaining the toxicity of spent lamps and consequently for determining whether spent lamps constitute a hazardous waste. According to EPA, the TCLP's co-disposal scenario with municipal solid waste as well as its grinding and dilution/attenuation features are reasonable. Moreover, mercury has shown mobility in municipal solid waste landfill environments, migrating in leachate to contaminate ambient groundwater.

Prior to the Final Hazardous Waste Lamps Rule, generators of spent lamps that exhibited the TC had to comply with all applicable hazardous waste management requirements under RCRA Subtitle C (including on-site management, pre-transport, and manifesting requirements), unless their activities qualified them for reduced regulation as follows:

- (1) Conditionally-exempt small quantity generators (CESQGs) of less than 100 kilograms of hazardous waste in a calendar month are not subject to RCRA Subtitle C requirements.
- (2) Generators of more than 100 kilograms but less than 1,000 kilograms are allowed to use certain reduced hazardous waste management standards.
- (3) Household generators of waste lamps may be exempt from hazardous waste management requirements.
- (4) Finally, several States already regulate waste lamps as universal waste lamps under their authorized RCRA programs.

RATIONALE FOR ADDING HAZARDOUS WASTE LAMPS TO THE UNIVERSAL WASTE PROGRAM

EPA emphasizes that the Final Hazardous Waste Lamps Rule will:

- facilitate management of hazardous waste lamps;
- improve implementation of the hazardous waste program; and
- adequately protect human health and the environment from the risks posed by the management of hazardous waste lamps. [64 FR 36466]

Necessity of Management Controls for Spent Mercury-Containing Lamps. EPA believes that management controls should be imposed on mercury-

containing lamps because mercury is easily volatilized and can be dispersed widely through the air, especially during transportation and accumulation of spent lamps. Exposure of humans, animals, and plants to mercury and accumulation of mercury in the environment may result in ecological and human health impacts. Mercury may especially affect the neurological development of children. Although new municipal waste combustors of a certain size are regulated under Clean Air Act programs, mercury from lamps may be released by two sources not governed by EPA's Office of Air Quality Planning and Standards (OAQPS):

- combustors of certain small capacities of municipal waste; and
- lamp breakage and lamp crushing operations.

Accordingly, RCRA management controls for spent mercury-containing lamps are necessary to:

- minimize releases of mercury to the environment during accumulation and transport;
- ensure safe handling; and
- eliminate disposition in municipal waste management facilities, including landfills and solid waste incinerators. [64 FR 36470-71]

Advantages of the Universal Waste Approach over a Conditional Exemption for Spent Mercury-Containing Lamps. In the Final Hazardous Waste Lamps Rule, EPA adopted the universal waste structure for regulating hazardous waste lamps, arguing that a conditional exemption approach would not sufficiently protect human health and the environment.

According to EPA, mercury poses an environmental threat. Therefore, man-made sources of mercury emissions should be reduced or managed appropriately. The Agency reasons that the universal waste approach will accomplish this by imposing regulatory controls sufficient to encourage the collection and environmentally sound management of spent lamps, including recycling. Moreover, EPA expects that regulating mercury-containing lamps as universal waste, with the associated threat of enforcement for mismanagement of hazardous waste, will provide greater incentive for generators to reduce or eliminate the presence of mercury in the lamps they use.

In contrast, if EPA had adopted a conditional exemption removing mercury-containing lamps from RCRA hazardous waste controls, there would be little emphasis on protecting lamps from breakage during storage, transport, and landfilling. The Agency believes generators, as a result, would have had less reason to recycle waste lamps, and instead would have been encouraged to dispose of them in municipal landfills. Therefore, under a conditional exemption, larger amounts of mercury might have been released to the environment.

EPA notes that another advantage of the universal waste approach is the requirement that handlers and destination facilities must comply with the substantive requirements of the Land Disposal Restrictions (LDR) provisions under the Hazardous and Solid Waste Amendments (HSWA) of 1984. The Agency considers compliance with the LDR program necessary to minimize risks from managing spent mercury-containing lamps.

Finally, EPA explains that the universal waste approach provides more consistency between Federal and State regulations governing the management of spent hazardous waste lamps. According to EPA, several States have already added spent mercury-containing lamps to their authorized universal waste programs. The Agency hopes that the adoption of the universal waste approach by the Final Hazardous Waste Lamps Rule will encourage more States to regulate spent lamps as universal waste. EPA expects this to improve management efficiency and reduce compliance costs for interstate waste handlers. [64 FR 36471-72]

Justification for Relief from Full Subtitle C Requirements for Mercury-Containing and Other Hazardous Waste Lamps. Based on the criteria for adding wastes to the universal waste program (40 CFR 273.81), EPA concludes that the universal waste structure is appropriate for spent lamps for the following reasons:

- spent lamps are often hazardous because they exhibit the TC by exceeding the regulatory levels for mercury, and sometimes lead;
- spent hazardous waste lamps are generated: by a diverse group of generators (e.g., office buildings, retail establishment, & other building managers); or by a large number of generators, while generation quantities tend to be relatively small;

- universal waste packaging standards and increased recycling will encourage close stewardship of the waste;
- universal waste requirements, including handling and packaging, will reduce the risk of breakage during accumulation and transport;
- simplified and streamlined universal waste regulations will provide an incentive for the regulated universe to collect the unregulated portions of the waste stream (e.g., hazardous waste lamps generated by CESQs or by consumers in their homes) and manage them in the same systems developed for the regulated portion, thereby diverting at least some of the waste from management in the municipal waste stream; and
- the simplified and streamlined universal waste regulations will improve overall compliance with the hazardous waste regulatory program, because a less complex program provides the regulated universe, which is generally interested in reduced technical and paperwork burdens, with a more accessible and welcome starting point for good environmental management. [64 FR 36472-73]

CONTENTS OF THE FINAL RULE

Waste Covered by the Final Hazardous Waste Lamps Rule. EPA offers a single definition of “lamp” or “universal waste lamp.”

- A universal waste lamp is defined as the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infra-red regions of the electromagnetic spectrum. Examples of common universal waste electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. (40 CFR 260.10)

All hazardous waste lamps fall within the scope of the universal waste rule. Lamps not covered include lamps that are not yet wastes and lamps that are not hazardous wastes. A used lamp becomes a waste when it is discarded. An unused lamp becomes a waste when the handler decides to discard it. A lamp is a hazardous waste if it exhibits one or more of the characteristics of a hazardous waste. (40 CFR 273.5)

Participants in the Universal Waste System. The universal waste management system distinguishes four categories of participants in the universal waste management system: small quantity handlers of universal waste, large quantity handlers of universal waste, transporters, and destination facilities. As a consequence of the Final Hazardous Waste Lamps Rule, handlers of hazardous waste lamps are now classified within these categories.

- The term “universal waste handler” is defined as:
 - the person generating universal waste (in the case of hazardous waste lamps, this is the person who uses and then determines that the lamps should be discarded); or
 - the owner or operator of a facility: (1) receiving universal waste from universal waste generators or other handlers; (2) accumulating universal waste; and (3) sending universal waste to another universal waste handler, to a destination facility, or to a foreign destination. (40 CFR 273.9)
- Whether a waste handler is a small or large handler of universal waste depends on the amount of universal waste accumulated at any time.
 - A small quantity handler accumulates less than 5,000 kilograms of universal waste at any time. The accumulation limit refers to the total quantity of all universal waste that is handled onsite at one time, including batteries, pesticides, thermostats, and lamps.
 - A large quantity handler accumulates 5,000 kilograms or more of universal waste at any time. Once a handler is designated as a large quantity handler he/she retains this designation for the remainder of the calendar year in which the 5,000-kilogram threshold level was exceeded. (40 CFR 273.9)
- Persons who treat, dispose of, or recycle universal waste (including hazardous waste lamps), unless they engage in certain release response activities are not “universal waste handlers.” They are “destination facilities” and their activities remain subject to all applicable hazardous waste regulations. (40 CFR 273.9)
- Transporters of universal waste (including hazardous waste lamps) are governed by specific management standards. A universal waste transporter is a person engaged in the offsite

transportation of universal waste by air, rail, highway, or water. (40 CFR 273.9)

Specific Management Requirements for Small and Large Quantity Handlers of Universal Waste Lamps.

The requirements for small quantity handlers of universal waste are located in Subpart B of Part 273. Subpart C of Part 273 provides the standards for large quantity handlers of universal waste. Hazardous waste lamp handlers operating under the Universal Waste Rule must comply with all applicable universal waste management requirements.

- *Notification Requirements.* Small quantity handlers of hazardous waste lamps are not required to notify EPA of their universal waste management operations. They do not need to obtain an EPA identification number. In contrast, large quantity handlers must notify EPA or the authorized State of their universal waste management activities and they must obtain an EPA identification number, if they do not already have one. (40 CFR 273.12; 40 CFR 273.32)
- *Waste Management Requirements.* A universal waste handler must manage lamps in a manner that prevents releases of any (component of) universal waste into the environment, as follows:
 - intact lamps must be placed in containers and packages; containers and packages must be closed, sound, adequate to prevent breakage, compatible with the lamps, and lack evidence of leakage, spilling, or damage.
 - broken lamps must be cleaned up immediately and placed in containers; lamps exhibiting evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous constituents to the environment must be placed in a container; containers must be closed, sound, compatible with the contents of the lamps, and lack evidence of leakage, spilling, or damage that could cause the release of mercury or other hazardous constituents to the environment. (40 CFR 273.13(d); 40 CFR 273.33 (d))
- *Labeling and Marking Standards.* The Final Hazardous Waste Lamps Rule specifies

labeling and marking standards for waste lamps to prevent breakage of spent lamps during accumulation, storage, and transport. The handlers of universal waste lamps must label each universal waste lamp or container using one of the following phrases: “Universal Waste—Lamp(s)” or “Waste Lamp(s)” or “Used Lamps(s).” (40 CFR 273.14; 40 CFR 273.34)

- *Accumulation Time Limits.* Handlers may accumulate universal waste, including lamps, for one year. If lamps or other universal wastes are stored in excess of one year, the handler must demonstrate that the sole purpose of this storage consists of facilitating proper recovery, treatment, or disposal. (40 CFR 273.15; 40 CFR 273.35)
- *Employee Training Requirements.* Large quantity handlers of universal wastes, including lamps, must ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures. Small quantity handlers must inform all employees that handle or have management responsibilities of proper handling and emergency procedures. (40 CFR 273.16; 40 CFR 273.36)
- *Release Response Requirements.* The Final Hazardous Waste Lamps Rule does not amend the release-response provisions of the universal waste regulations. EPA emphasizes in the preamble that the existing regulations will apply to universal waste lamps. Therefore, any releases of universal waste lamps not cleaned up could be illegal disposal subject to RCRA enforcement action. Moreover, releases of hazardous substances above reportable quantity threshold levels must be reported under the Comprehensive Environmental Response, Compensation, and Liability Act. (40 CFR 273.17; 40 CFR 273.37)
- *Offsite Shipment Provisions.* The Final Hazardous Waste Lamps Rule does not amend existing universal waste regulations with respect to offsite shipment provisions. Universal waste handlers are prohibited from sending their universal waste, including hazardous waste lamps, to a location other than another universal waste handler, a destination facility, or a foreign destination. Handlers who themselves undertake transportation of universal wastes, including lamps, must comply with the universal waste transporter regulations. Universal waste lamps

that meet the Department of Transportation (DOT) definition of hazardous material must comply with applicable DOT requirements.

Prior to shipment of universal waste, including hazardous waste lamps, to another waste handler, the originating handler must ensure that the receiving handler agrees to receive the shipment. If a universal waste handler sends a shipment to another universal waste handler or a destination facility and the shipment is rejected, the sender must take the load back or agree with the receiving handler on re-routing the shipment to a destination facility. In case that a universal waste handler rejects (part of) a universal waste shipment, the handler must notify the sending handler and return the shipment to the originating handler or, through a mutual agreement with the sender, re-route the shipment to a destination facility. Upon receipt of a shipment containing hazardous non-universal waste, a universal waste handler must notify the appropriate EPA Regional Office, which will provide further instructions. If the shipment includes non-hazardous non-universal waste, the handler may manage the waste according to applicable Federal, State, or local solid waste regulations. (40 CFR 273.18; 40 CFR 273.38)

Large quantity handlers of universal wastes, including hazardous waste lamps, must track and record for their facility any universal waste receipts and dispatches. (40 CFR 273.19; 40 CFR 273.39)

Effect of the Final Hazardous Waste Lamps Rule on Conditionally Exempt Small Quantity Generators. CESQGs can choose to manage their universal waste lamps pursuant to either the CESQG regulations at 40 CFR 261.5 or the universal waste regulations at 40 CFR Part 273. Handlers and destination facilities mixing universal waste lamps from CESQGs and other universal waste are required to manage the combined waste as universal waste.

Standards for Transporters of Universal Waste Lamps. Universal waste transporter requirements are offered in Subpart D of Part 273. These now apply to transportation of hazardous waste lamps.

- Universal waste transporters must ship universal waste to a universal waste handler or a destination facility.

- Universal waste shipments do not require a hazardous waste manifest as specified in 40 CFR Part 262. Universal waste is therefore not considered a “hazardous waste” under DOT regulations. However, universal waste transporters must ascertain whether the waste falls under any of the other DOT hazard classes to determine if compliance with DOT regulations for “hazardous materials” is required.
- Universal waste transporters may store universal waste lamps for up to ten days at a universal waste transfer (i.e., transport-related) facility during the course of transportation. Any storage exceeding ten days must comply with appropriate universal waste handler requirements. Universal waste transporters are subject to release response requirements in 40 CFR 273.54.

Requirements for Destination Facilities. Subpart E of Part 273 provides the standards for destination facilities. These now apply to facilities that treat, dispose of, or recycle hazardous waste lamps.

- The universal waste regulations subject destination facilities to all applicable hazardous waste management requirements governing permitted or interim status hazardous waste treatment, storage, and disposal facilities.
- Facilities recycling without accumulating universal waste lamps are subject to specific requirements for recyclable materials. (40 CFR 261.6(c)(2))

Import and Export Requirements. Subpart F of Part 273 contains import requirements. Export requirements are found at 40 CFR 273.20 for small quantity handlers of universal waste, at 40 CFR 273.40 for large quantity handlers, and at 40 CFR 273.56 for transporters. These requirements now apply to handlers and transporters of hazardous waste lamps.

- Upon entry into the United States, imported universal wastes must be managed in compliance with all applicable universal waste management requirements. Imported universal waste is counted toward the quantity of waste when determining whether the importing handler falls into the small quantity or large quantity category. Handlers managing universal waste imported

from a country belonging to the Organization for Economic Cooperation and Development (OECD) are subject to EPA’s regulations for transfrontier shipments of hazardous waste for recovery within the OECD. (40 CFR Part 262 Subpart H)

- Handlers exporting universal wastes are subject to the same provisions as generators of hazardous waste. (40 CFR Part 262 Subparts E & H) Transporters must ensure delivery of the universal waste to the facility identified by the person initiating the shipment. Shipments must conform to the EPA Acknowledgement of Consent.

Land Disposal Restriction Requirements.

Universal wastes (including hazardous waste lamps) as hazardous wastes, remain subject to the LDR program. (40 CFR 268)

- Universal waste handlers and transporters must comply with the substantive requirements of the LDR program, which prohibit land disposal of hazardous wastes, unless they have been treated, or they are placed into a unit from which hazardous constituents will not migrate. However, universal waste handlers and transporters, are not required to comply with the LDR notification and certification requirements (40 CFR 268.7) or the storage prohibition (40 CFR 268.50).
- Destination facilities are required to comply with all LDR requirements, including treatment standards and compliance documentation.

Absence of a Sunset Provision. The Final Hazardous Waste Lamps Rule does not include a sunset provision. EPA notes in the preamble that, if additional information and data with respect to the behavior of mercury becomes available in the future, the Agency may revisit the standards promulgated in the Final Hazardous Waste Lamps Rule. [64 FR 36481-82]

EFFECTS OF THE FINAL RULE

State Authorization. In general, States are not required to revise their RCRA programs to incorporate new Federal requirements, unless the new Federal requirements are more stringent than

existing Federal requirements (independent of whether promulgation of such requirements is pursuant to HSWA or non-HSWA authority).

In any State without RCRA base authorization, provisions of a Federal rule promulgated pursuant to non-HSWA authority are implemented by EPA and become effective in the State on the effective date of the Federal final rule. In any State with RCRA base authorization, such provisions must be implemented by the State, and do not become effective until after the State has amended its regulations and the EPA has approved the amended program.

EPA considers the Final Hazardous Waste Lamps Rule, which has been promulgated under legal authorities other than HSWA, to be less stringent than the standards predating the rulemaking. Therefore, authorized States do not have to adopt the universal waste regulations for spent lamps. Notwithstanding, EPA will implement the Final Hazardous Waste Lamps Rule in States that do not have authorized RCRA programs.

EPA notes, however, that a number of authorized States have already added spent lamps to their universal waste programs. Such States with standards less stringent than those promulgated in the Final Hazardous Waste Lamps Rule will need to make adjustments, which render their programs equivalent to the standards promulgated under the Final Hazardous Waste Lamps Rule, and pursue authorization.

- Since the Final Hazardous Waste Lamps Rule does not contain crushing standards for spent lamps, EPA advises that if a State adopts regulations allowing crushing, their equivalency to the Federal program will be determined at the time of authorization. [64 FR 36482]

Interstate Transport. Since authorized States are not required to adopt the Final Hazardous Waste Lamps Rule, universal waste lamps may be subject to interstate transportation involving States with different programs. The table “Interstate Transportation” (page 8 of this Regulatory Bulletin) provides an overview of the requirements governing the different combinations of transportation stages (i.e., State of origin, intermediary State, and destination State) and types of regulation (i.e., full hazardous waste or universal waste programs).

Questions of policy or questions requiring policy decisions will not be dealt with in EH-413 Regulatory Bulletins unless that policy has already been established through appropriate documentation. Please refer any questions concerning the subject material covered in this Regulatory Bulletin to:

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Interstate Transportation Requirements

State of Origin	Intermediate State(s)	Destination State	Requirements
UW	UW	UW	<ul style="list-style-type: none"> ◆ No HW manifest required ◆ No HW transporter required
HW	HW, UW	HW	<ul style="list-style-type: none"> ◆ Prepare manifest ◆ Deliver manifest to HW transporter ◆ HW transporter to sign manifest, return copy to generator, deliver to next transporter or destination facility, and obtain signature ◆ HW destination facility to return copy with all signatures to generator
UW	HW	UW	<ul style="list-style-type: none"> ◆ Prepare manifest indicating that (1) initiating State covers waste under UW program; and (2) destination State covers waste under UW program ◆ Deliver manifest to first transporter who will carry waste in State without UW program; this must be HW transporter ◆ HW transporter to sign manifest, return copy to generator, deliver manifest to next transporter or destination facility, and obtain signature ◆ HW transporter to return copy with all signatures to generator
HW	UW, HW	UW	<ul style="list-style-type: none"> ◆ Prepare manifest indicating that (1) initiating State covers waste under HW program; and (2) destination State covers waste under UW program ◆ Deliver manifest to HW transporter ◆ HW transporter to sign manifest, return copy to generator, deliver manifest to next transporter or destination facility, and obtain signature ◆ Generator to ensure that each non-HW transporter in intermediate UW States transmit manifest to next transporter, or destination UW facility, and that UW facility signs manifest and returns copy with all signatures to generator
UW	HW, UW	HW	<ul style="list-style-type: none"> ◆ Prepare manifest indicating that (1) initiating State covers waste under UW program; and (2) destination State covers waste under HW program ◆ Deliver manifest to first transporter who will carry waste in State without UW program; this must be HW transporter ◆ HW transporter to sign manifest, return copy to generator, deliver to next transporter or destination facility, and obtain signature ◆ HW destination facility to return copy with all signatures to generator

Note: HW stands for States with full hazardous waste regulations, UW denotes States with universal waste regulations.